Diagnostic Instrumentation and Analysis Laboratory Support to DOE Sites and Developers

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Abstract

DIAL was established over 20 years ago to support the Department of Energy's magnetohydrodynamic power program. Its historic mission has been to develop instrumentation and to test the performance of devices intended for use in severe environments. Its high-temperature testing capabilities and its ability to rapidly deploy very sophisticated instrumentation in the field has been an important component of its success. This has enabled DIAL to characterize the performance of critical components and systems under real-world conditions, through testing at either the DIAL facilities or at its customers' sites.

In accomplishing its past mission, DIAL has built up an engineering staff which is experienced in putting together whatever instrumentation and equipment is needed to characterize and solve processing problems. DIAL has provided its services both to industry and to DOE EM's Office of Science and Technology (OST). DIAL's new 58,000 square foot facility represents a significant expansion of DIAL's testing facilities which also enhances its measurement capabilities, for example allowing DIAL to carry out studies with radioactive samples.

DIAL has also significantly enhanced its value to OST through establishing several "networks." DIAL's Director has set up a network of key users from each of the major DOE sites and of important private contractors involved in privatization efforts. Joint ventures have been formed with other DOE grantees (AEA, TRW) so that DIAL's unique capabilities can enhance the efforts of those of other DOE-sponsored organizations. In addition, several vendors of commercial systems in use by DOE are coming to DIAL for assistance in characterizing the performance of their systems.

DIAL's characterization of the performance of a cold crucible induction melter developed in Russia is an excellent example of DIAL's responsiveness. In April, 1998, the Department asked DIAL whether it would be willing to characterize the performance of this equipment. DIAL agreed, and in June received the unit in pieces. By September, DIAL's test personnel had the unit up and running (with the help of the Russian inventors), and by January had a report to DOE which detailed the initial operations, redefined the field of use for the unit, and made recommendations for possible future testing.

DIAL has also formed strategic partnerships with other units within the University, and with other facilities with testing capabilities, to expand the types of testing which DIAL can perform.

Within MSU, the Water Resources Research Institute and the Engineering Research Center for Computational Field Simulation provide complementary capabilities which DIAL is calling on for specific initiatives. DIAL also has an agreement with Florida International University (FIU), which provides DIAL access to FIU's test bed for decontamination technologies. In addition, DIAL has reached agreement with the Golden Triangle Regional Solid Waste Management Authority to use its facilities as a testbed for landfill remediation technologies. DIAL has also reached agreement with the USGS' Hydrologic Instrumentation Facility and the Army Corps of Engineers' Waterways Experiment Station to use their testing facilities when needed.

DIAL has recently undertaken an important new initiative. With the concurrence of OST, DIAL is announcing a new program designed to provide inexpensive direct support to the DOE sites for startup and optimization of waste treatment processes. This program, called Dfacts - Diagnostic Field Applications, Coordination, and Testing Support - focuses DIAL's arsenal of instrumentation and experienced personnel on site problems, often at no cost to the site.

DIAL has over twenty years of experience in developing instrumentation for unusual environments, and in characterizing processes and technologies under real-world conditions, either at our own facilities or at our clients' sites. We are inviting the DOE sites to take advantage of that investment, and to leverage DIAL's resources to meet site needs.

The process for accessing Dfacts is simple. Once DIAL is notified of a site's interest, we will go to the site for an in-depth assessment of the process, at no cost to the site. Based on DIAL's experience and through interviews with site personnel, we will produce a comprehensive strategy for characterization or optimization of the process. This strategy will identify key performance parameters (both for process optimization and stakeholder acceptance), and appropriate methods for determining these parameters. In some cases, we will actually make measurements at no cost to the site to determine whether we are recommending an appropriate path forward.

As appropriate, we will recommend use of DIAL's on-line, real-time, measurement capabilities, or perhaps DIAL's capability to support testing, or perhaps the services of one of our commercial partners. For many of a site's needs, DIAL's assistance will come at no cost to the site. Even in the worst case, DIAL's services will cost less than virtually any other alternative because of DIAL's existing capabilities, its low overhead, and its flat organizational structure. The site will then decide what part they want DIAL to play, if any. This decision is easier than the usual decision about a service supplier, because the site will already have had the opportunity to get to know DIAL and what it can do.

DIAL's ability to support DOE and commercial entities goes beyond its facilities and personnel. DIAL's flat organizational structure and autonomous role in a university setting give it the ability to rapidly and cost effectively respond to changing needs. DIAL's unitary management structure enables it to rapidly orient resources wherever they are needed. The open access implicit in DIAL's university affiliation also enhances its ability to bring developers, users, and stakeholders together in a neutral setting.